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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/751,238	12/30/2003	Long-Sheng Liao	B-5342 621590-4	3885
7590 Richard P. Berg, Esq. c/o LADAS & PARRY Suite 2100 5670 Wilshire Boulevard Los Angeles, CA 90036-5679		05/24/2007	EXAMINER TSAI, H JEY	
			ART UNIT 2812	PAPER NUMBER
			MAIL DATE 05/24/2007	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

**Office Action Summary**

Application No.

10/751,238

Applicant(s)

LIAO ET AL.

Examiner

H.Jey Tsai

Art Unit

2812

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 21 March 2007.  
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.  
4a) Of the above claim(s) 9-20 is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 1-8 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.  
10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_.  
5) ☐ Notice of Informal Patent Application  
6) ☐ Other: \_\_\_\_\_.

***Election/Restriction***

This application contains claims 9-20 drawn to an invention nonelected with traverse in the reply filed on Sept. 29, 2006. A complete reply to the final rejection must include cancellation of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP § 821.01.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-2 and 6-7 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Bohr et al. 6,073,464. in view of skill level of one of ordinary person in the art.

Bohr et al. discloses a system of automatic beam energy control, comprising:  
a substrate holding apparatus TAB holding a substrate PA, fig. 2, col. 5, lines 36-67,  
a measurement apparatus (ellipsometer) EL, measuring thickness and hydrogen content (surface physico-chemical characteristics, including hydrogen content, thickness etc, see col. 8, line 64 to col. 9, line 18) of the substrate, col. 5, lines 10-36,  
a comparing apparatus GES1, GES2 (a microcomputer having memory to store process data, such as adjustment data, target data, determining laser beam energy

Art Unit: 2812

from a look-up table etc, see col. 6, lines 14-29, col. 7, lines 1-10, col. 11, lines 46-49), providing a database further comprising critical hydrogen content limits and appropriate beam energy levels for substrates of different thicknesses, allowing determination of whether a measured hydrogen content value exceeds a critical hydrogen content limit, providing an appropriate beam energy level accordingly, figs. 2, 4, col. 11, line 4 to col. 12, line 30, col. 9, lines 30-60,

a energy beam apparatus LA, delivering beam energy to the substrate accordingly, col. 11, lines 50-51, col. 12, lines 1-29,

regarding claim 2, wherein the measurement apparatus utilizes ellipsometry EL, figs. 1-2, col. 5, lines 37-40, col. 8, line 64 to col. 9, line 18,

regarding claim 3, wherein the comparing apparatus issues a warning or alarm when hydrogen content exceeds a critical hydrogen content limit, col. 8, lines 46-63,

regarding claim 4, wherein the comparing apparatus GES1, GES2 instructs the measurement apparatus to measure thickness when the hydrogen content does not exceed the critical hydrogen content limit, fig. 4,

Regarding claim 6, wherein thickness is calculated in accordance with a refractive (optical) index of the substrate, col. 9, lines 8-18,

Regarding claim 7, wherein the substrate comprises amorphous Silicon, col. 9, lines 8-18,

Regarding claim 8, wherein the database comprises

Art Unit: 2812

appropriate (adjusting) beam energy levels required by different thicknesses of amorphous silicon for reconstitution into crystal silicon, col. 11, lines 10-12, col. 12, lines 23-29.

The difference between the references applied above and the instant claim(s) is: Boher et al. teaches an energy beam apparatus having an ellipsometer apparatus for measuring thickness and hydrogen content of substrate, a comparator apparatus of a microcomputer for comparing and as a controller of the system and a laser beam apparatus having memory to store process data, such as adjustment data, target data, measuring the thickness and hydrogen contents, determining laser beam energy from a look-up table, lowering the laser beam energy to prevent the hydrogen explosion when hydrogen content reach the critical limit and firing the laser beam accordingly, etc. but Boher does not specifically teaches a database further comprising critical hydrogen content limits and appropriate beam energy levels for substrates of different thicknesses, allowing determination of whether a measured hydrogen content value exceeds a critical hydrogen content limit. However, Boher teaches at col. 6, lines 14-29, col. 7, lines 1-10, col. 11, lines 46-51, col. 8, line 64 to col. 9, line 18, having memory to store process data, such as adjustment data, target data, measuring the thickness and hydrogen contents, determining laser beam energy from a look-up table, lowering the laser beam energy to prevent the hydrogen explosion when hydrogen content reach the critical limit and firing the laser beam accordingly, etc. Hence, It would have been obvious to one of ordinary skill in the art at the time the invention was made to recognize that Boher et al. references' teachings of stored process data,

adjustment data, target data, measuring the thickness and hydrogen contents, determining laser beam energy from a look-up table, lowering the laser beam energy to prevent the hydrogen explosion when hydrogen content reach the critical limit and firing the laser beam accordingly is equivalent to a database comprising critical hydrogen content limits and appropriate beam energy levels for substrates of different thicknesses, allowing determination of whether a measured hydrogen content value exceeds a critical hydrogen content limit or just simply includes the critical data etc. in the look up table or adjustment data or target data, etc.

And, a claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. *Ex parte Masham*, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987), see MPEP §2114 [R1].

And, Since Boher et al. teaches an apparatus having ellipsometer measuring apparatus for measuring thickness and hydrogen content of substrate, a comparator apparatus of a microcomputer as comparing/controller apparatus having capability of storing the process data, adjustment data, target data, measuring the thickness and hydrogen contents, determining laser beam energy from a look-up table, lowering the laser beam energy to prevent the hydrogen explosion when hydrogen content reach the critical limit and firing the laser beam accordingly, hence, the patentable weight is not given to the intended use of method of operating and making the apparatus. The method of operating and making an apparatus is not germane to the issue of

patentability of the apparatus itself. Therefore this description does not carry any patentable weight. See MPEP §§ 2112-2115.

Claim 3 is rejected under 35 U.S.C 103 as being unpatentable over Boher et al. as applied to claims 1-2, 6, 7-8 above, and further in view of Takamatsu et al. 2001/0008803 and skill level of one of ordinary person in the art.

The difference between the references applied above and the instant claim(s) is: Boher et al. teaches a comparing apparatus a microcomputer having memory to store process data, such as hydrogen content, adjustment data, target data, determining laser beam energy from a look-up table etc. and firing the laser beam but does not teach a warning or alarm. However, Takamatsu teaches at para. 6, installing an alarm system in the equipment. And, since Boher et al. teaches the system of energy beam control includes a microcomputer to automatic control and monitor the entire operation of the system. Since, every computer has voice and sound capability, hence, it would be obvious to add a warning or alarm in the computer by inserting an instruction in computer program so that microcomputer would beep or voice warning when hydrogen reach the upper limit of the process limitation.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the above references' teachings by installing an alarm in the Apparatus for laser beam control or just program the microcomputer to beep as taught by Takamatsu et al. because alarm or beeping sound from computer can alert operator about the hydrogen upper limit so that operation can make safety precautions.

Claim 4 is rejected under 35 U.S.C 103 as being unpatentable over Boher et al. as applied to claims 1-2, 6, 7-8 above, and further in view of skill level of one of ordinary person in the art.

The difference between the references applied above and the instant claim(s) is: Boher et al. teaches an energy beam apparatus having ellipsometer measuring apparatus for measuring thickness and hydrogen content of substrate, a comparator apparatus of a microcomputer for comparing and as a controller of the system and a laser beam apparatus but Boher does not specifically teaches instructing the measurement apparatus to measure thickness when the hydrogen content does not exceed the critical hydrogen content limit. However, Boher teaches using ellipsometer to measure hydrogen content and thickness and ellipsometer is control by a microcomputer (comparing/controller apparatus), hence, It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the above references' teachings by programming the microcomputer to measure the thickness when hydrogen content does not exceed the critical hydrogen content limit because there are too many tasks to perform for microcomputer such as lowering the laser beam energy to prevent the hydrogen explosion when hydrogen content reach the critical limit. And, Since, Boher et al. teaches using an ellipsometer to measure hydrogen content and thickness of substrate in conjunction with a microcomputer as a controller and comparator, hence, the patentable weight is not given to the method of how to instruct the ellipsometer apparatus. The method of operating an apparatus is not germane to



the issue of patentability of the apparatus itself. Therefore this description does not carry any patentable weight. See MPEP §§ 2112-2115.

Claim 5 is rejected under 35 U.S.C 103 as being unpatentable over Boher et al. as applied to claims 1-2, 6, 7-8 above, and further in view of Admitter prior art of Amorphous and Liquid semiconductor, by Tauc J, 1974 in page 5-6 of instant specification or Matsuyama et al. 5,252,142.

The difference between the references applied above and the instant claim(s) is: Boher et al. teaches an apparatus having ellipsometer measuring apparatus for measuring thickness and hydrogen content of substrate, comparator, a microcomputer as comparing/controller apparatus and a laser beam apparatus but Boher does not teaches calculating hydrogen content with the relationship of light extinction coefficient and a bandgap of the substrate. However, Tauc J, teaches a formula for calculating hydrogen by using the relationship of light extinction coefficient and a bandgap of the substrate. Matsuyama et al. teaches at col. 13, lines 10-13, col. 17, lines 15-25, the hydrogen is related to the bandgap of the substrate and light extinction coefficient.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the above references' teachings by using Tauc J's formula or Matsuyama et al.'s teaching to calculate the hydrogen content.

Since, Boher et al. teaches an energy beam apparatus including an ellipsometer for measuring hydrogen content, hence, the patentable weight is not given to the

method of making the ellipsometer apparatus. The method of making an apparatus is not germane to the issue of patentability of the apparatus itself. Therefore this description does not carry any patentable weight. See MPEP §§ 2112-2115.

### ***Conclusions***

Applicant's arguments filed March 21, 2007 have been fully considered but they are not persuasive. Applicant contends that Examiner fails to provide definition of ordinary skill level of one of ordinary person in the art. However, such definition can be found in chapters 700, 800, 1200, 2100...of MPEP and in any patent law textbook. And, Bohr et al. teaches at col. 6, lines 14-29, col. 7, lines 1-10, col. 11, lines 46-49, a comparing apparatus GES1, GES2 comprising a microcomputer having memory to store process data, such as adjustment data, target data, determining laser beam energy from a look-up table etc. Since, Bohr et al. teaches using a computer, it would be obvious that one of ordinary skill in the art would manipulate the data and using computer to automatically compare critical hydrogen content limits and appropriate beam energy levels for substrates of different thicknesses, allowing determination of whether a measured hydrogen content value exceeds a critical hydrogen content limit, providing an appropriate beam energy level accordingly, see figs. 2, 4, col. 11, line 4 to col. 12 line..30, col. 9, lines 30-60.

In *Sakraida v. AG Pro, Inc.*, 425 U. S. 273(1976), the Court derived from the precedents the conclusion that when a patent simply arranges old elements with each

performing the same function it had been known to perform and yields no more than one would expect from such an arrangement, the combination is obvious. *Id.*, at 282.

The principles underlying these cases are instructive when the question is whether a patent claiming the combination of elements of prior art is obvious. When a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one. If a person of ordinary skill can implement a predictable variation, §103 likely bars its patentability. For the same reason, if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill.

When a work is available in one field, design incentives and other market forces can prompt variations of it, either in the same field or in another. If a person of ordinary skill in the art can implement a predictable variation, and would see the benefit of doing so, §103 likely bars its patentability. Moreover, if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond that person's skill. see *KSR international v. Teleflex*, US Supreme Court, April 30, 2007.

Applicant contends that there must some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or combine reference teachings.... (Fed.Cir. 1991). However, *Takamatsu* teaches at para. 6, installing an alarm system. Hence, It would be

a common sense that familiar items may have obvious uses beyond their primary purposes, and a person of ordinary skill often will be able to fit the teachings of multiple patents together like pieces of a puzzle. see KSR international v. Teleflex, US Supreme Court, April 30, 2007.

The Federal Circuit addressed the obviousness question in a narrow, rigid manner that is inconsistent with §103 and this Court's precedents. see KSR international v. Teleflex, US Supreme Court, April 30, 2007.

The TSM test (teaching, suggest or motivation ) captures a helpful insight: A patent composed of several elements is not proved obvious merely by demonstrating that each element was, independently, known in the prior art. Although common sense directs caution as to a patent application claiming as innovation the combination of two known devices according to their established functions, it can be important to identify a reason that would have prompted a person of ordinary skill in the art to combine the elements as the new invention does. Inventions usually rely upon building blocks long since uncovered, and claimed discoveries almost necessarily will be combinations of what, in some sense, is already known. Helpful insights, however, need not become rigid and mandatory formulas. If it is so applied, the TSM test is incompatible with this Court's precedents. The diversity of inventive pursuits and of modern technology counsels against confining the obviousness analysis by a formalistic conception of the words teaching, suggestion, and motivation, or by overemphasizing the importance of published articles and the explicit content of issued patents. In many fields there may be little discussion of obvious techniques or combinations, and market demand, rather than

scientific literature, may often drive design trends. see KSR international v. Teleflex, US Supreme Court, April 30, 2007.

Granting patent protection to advances that would occur in the ordinary course without real innovation retards progress and may, in the case of patents combining previously known elements, deprive prior inventions of their value or utility. When there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue the known options within his or her technical grasp. If this leads to the anticipated success, it is likely the product not of innovation but of ordinary skill and common sense. In that instance the fact that a combination was obvious to try might show that it was obvious under §103. see KSR international v. Teleflex, US Supreme Court, April 30, 2007.

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Art Unit: 2812

Any inquiry concerning this communication or earlier communications from the examiner should be directed to H. Jey Tsai whose telephone number is (571) 272-1684. The examiner can normally be reached on from 7:00 Am to 4:00 Pm., Monday thru Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael S. Lebentritt can be reached on (571) 272-1873.

The fax phone number for this Group is 571-273-8300.

hjt

5/20/2007

A handwritten signature in black ink, appearing to read 'H. Jey Tsai', with a stylized flourish at the end.

H. Jey Tsai  
Primary Examiner  
Patent Examining Group 2800